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CLAIMS

1. (Previously presented) A method of depositing a low k dielectric film on a substrate, the method comprising

flowing a precursor gas containing Si, C, H and an oxygen-providing gas into a PECVD chamber containing a substrate, wherein the precursor gas and the oxygen-providing gas are substantially free of nitrogen, and wherein the oxygen-providing gas is selected from the group consisting of carbon monoxide, and a combination comprising carbon monoxide; and

depositing a hydrogenated oxidized silicon carbon film consisting essentially of Si, C, O and H on the substrate.

2. (Original) The method according to Claim 1; wherein the precursor gas is selected from the group consisting of methylsilane, dimethylsilane, trimethylsilane, tetramethylsilane, 1,3,5,7-tetra-methyl-cyclo-tetra-siloxane, tetraethylcyclotetrasiloxane, and decamethylcyclopentasiloxane silanes and combinations comprising at least one of the foregoing.

3. (Original) The method according to Claim 1, wherein the precursor gas is selected from the group consisting of methylsilane, dimethylsilane, trimethylsilane, tetramethylsilane, and combinations comprising at least one of the foregoing.

4. (Original) The method according to Claim 1, further comprising heating the PECVD chamber to a temperature ranging from 25°C to 500°C.

5. (Cancelled)

6. (Original) The method according to claim 1 wherein the precursor gas comprises an organosilicon compound having a ring structure selected from the group consisting of 1,3,5,7-tetramethylcyclotetrasiloxane, tetraethylcyclotetrasiloxane, and decamethylcyclopentasiloxane.

7. (Original) The method according to claim 1, wherein the hydrogenated oxidized silicon carbon film has a dielectric constant less than 3.5.

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8. (Original) The method according to claim 1, wherein the hydrogenated oxidized silicon carbon film has a dielectric constant less than 3.0.

9. (Original) The method according to claim 1, wherein the hydrogenated oxidized silicon carbon film has a dielectric constant of about 2.7.

10. (Previously Presented) The method according to claim 1, wherein the hydrogenated oxidized silicon carbon film is free from amine functionalities.

11. (Original) The method according to Claim 1, further comprising annealing the hydrogenated oxidized silicon carbon film at a temperature greater than 300°C.

12. (Original) The method according to Claim 1, wherein the plasma enhanced chemical vapor deposition chamber is a parallel plate plasma reactor.

13. (Original) The method according to Claim 1, further comprising flowing a diluent gas.

14. (Original) The method according to Claim 13, wherein the diluent gas is selected from the group consisting of helium, argon, xenon, and krypton.

15. (Original)The method according to Claim 1, wherein a flow rate ratio of the precursor gas to the oxygen providing gas is from about 10 : 1 to about 1: 5.

16. (Original) The method according to Claim 1, wherein the hydrogenated oxidized silicon carbon film is non-polymeric.

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17. (Previously presented) A method of depositing a low k dielectric film on a substrate, the method comprising

providing a substrate in a PECVD chamber;

flowing a precursor gas containing Si, C, H, an oxygen-providing gas, and a carrier gas into the PECVD chamber, the precursor gas and the oxygen-providing gas being substantially free of nitrogen and, wherein the oxygen-providing gas is selected from the group consisting of carbon monoxide, and combinations comprising carbon monoxide; and

depositing a nitrogen-free SiCOH dielectric film onto the substrate consisting essentially of Si, C, O and H, wherein the SiCOH dielectric film includes a dielectric constant less than 3.5.

18. (Original) The method according to Claim 17, wherein the precursor gas is selected from the group consisting of methylsilane, dimethylsilane, trimethylsilane, tetramethylsilane, and combinations of at least one of the foregoing.

19. (Original) The method according to Claim 17, wherein the nitrogen-free SiCOH dielectric film comprises a hydrogenated oxidized silicon carbon film.

20. (Cancelled)